Vas Recanalisation

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Summary

With the increasing number of vasectomies performed for family planning, the cases resorting for recanalisation of vas deferens is increasing every year. 297 cases of vas recanalisation were attempted during the last 25 years. If the previous vasectomies have been performed at the ideal site, the potency of the two ends of the vas could be confirmed with certainty and if the wife is in reproductive age, the chances of physiological success is high. In the present series, there were 81% anatomical success and 52% physiological success. The vast difference (29%) between the anatomical and physiological success could be due to low fertility status of the wives, presence of few, immature, dead, immobile spermatozoa in the semen or the presence of immune bodies in the serum of the vasectomized people against their own spermatozoa.

Keywords: Vasectomy, Vasovasostomy, recanalisation reversal
immune bodies, nylon splint, anatomical success,
physiological success.

Introduction

During the last three decades many people were subjected to permanent sterilization to control the unwanted population growth. Hence, the sterilized couple are coming to us for restoration of their fertility status. The main objective of recanalisation of the vas deferens is to attain the fatherhood of the client. This could be achieved by producing sufficient number of healthy, mobile spermatozoa which could fertilise the ova of his fertile wife and make him a proud father. The mere presence of spermatozoa in the semen

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of the client following recanalisation of vas is called anatomical success. The physiological success is achieved once the recanalised person could become father. The factors responsible for the physiological success of recanalisation are the following:

1. Age of the wife – she must be in the reproductive age : fertile.
2. Site and method of previous Vasectomy.
3. Duration between sterilisation and recanalisation procedure.
4. Size of the testes, testicular sensation.
5. Presence of antibody in the serum against spermatozoa.

The reproductive age of women ranges from 16-45 years but the fertility rate declines after the age of 40 years. For men seeking reversal of the procedure, the fertility status of the wives must be evaluated; otherwise the attempt of the surgeon will be a futile academic exercise. Though, the semen will show actively mobile sufficient spermatozoa (anatomical success) the client may not become father. The site and method of the previous vasectomy will decide the success of the reversal procedure. If the vasectomy has been done in

Fig. 1 : Correct site and method of Vasectomy.

the straight part of the vas with knuckles on one or both ends, the chance of successful reversal is quite high. If however, the vasectomy has been done in the convoluted part of the vas or the ends of the vas have been cauterised (burning or destroying long segment of the vas) or a long segment has been excised, the chance of reversal of the procedure is

meagre; the fibrosis makes confirmation of the potency of the vas difficult or impossible. It is very difficult to dilate the epididymal part of the vas or put a splint or anastomose, if the vasectomy is done at convoluted part. It is difficult to anastomose the straight and convoluted tubes or two convoluted tubes together.

The presence of antibodies in the serum of vasectomized clients against the spermatozoa has been established beyond doubt. In spite of an anatomical success, the spermatozoa is not able to fertilise the ova. It is probably because the antibodies in the serum against the spermatozoa interferes with the maturity or mobility of the spermatozoa. Unfortunately, we have not been able to estimate the antibody titre in our laboratory. The time interval between the sterilization and reversal procedure has also been blamed. It is said that "the longer the gap is, the smaller is the chance of success." Personally, I don't agree with the above statement, because we have been able to achieve physiological success in cases where the procedure was reversed after 20 years. The failure may be the result of a combination of factors viz age and fertility status of the wives, technique of recanalisation and the presence of immune bodies in the serum of the vasectomised.

Method

297 cases of vasovasostomy were performed in Bir Hospital, Kathmandu, Tribhuvan University Teaching Hospital, Koshi Zonal Hospital, Biratnagar and in my own private clinic. The indications for recanalisation of vas were:

1. Loss of children (especially son)	--	219
2. Re-union (another marriage)	--	67
3. Psychological change	--	6
4. Wrong motivation	--	5
	Total	— 297
Other indications--		
Accidental vasectomy	---	5
Primary sterility	---	4

I have excluded cases of accidental injury of the vas deferens during surgical procedures in the inguinoscrotal region because the injury is unilateral. The cases of primary sterility has also been excluded, because the testicles were atrophic.

The loss of children, especially the son, accounted for 319 cases demanding reversal of vasectomy. 67 people came for reversal following another marriage. Six cases developed severe mental depression following vasectomy and needed reversal of procedure after thorough medical trial. However, the psychological status did not improve even after successful recanalisation of the vas. There were five unmarried who underwent vasectomies to get the incentives.

Technique of recanalisation

Under local anaesthesia, a vertical incision is made over the side of the scrotum. The vas deferens is mobilized. The two ends are cut with a sharp cutting knife and the knot is removed. The two ends are dilated by lacrimal duct dilator or vas dilator. The patency of the vas is confirmed. There should be free flow of white fluid from the testicular end of the vas. The fluid, if examined under the microscope reveals the presence of spermatozoa. No. 1 monofilament nylon is passed in the lumen of both the proximal and the distal tubes. About 5 ml. of sterile normal saline is injected into the lumen of the prostatic end of the vas, to flush out the vas deferens, seminal vesicle and common ejaculatory duct. Once the patency of the vas is confirmed, end-to-end anastomosis is confirmed. A piece of monofilament nylon placed in the lumen as splint is very helpful. The needle is introduced through the fibromuscular coat of the vas, brought out through the lumen, threaded through the lumen of the distal tube and brought out through its fibromuscular coat. Both ends of the vas are approximated together over the nylon splint which is brought out through skin and a knot is tied outside the skin. A few stitches of 0000 atraumatic ethylone or prolene in cutting curved needle are made over the fibromuscular wall of the vas deferens. The same procedure is repeated over the opposite side. The wound is closed with interrupted silk thread. The nylon splint is removed on the 4th post operative day.

Fig. 2 : Confirming the potency of Vas.

Haematoma and wound infection hinder the success of the procedure after recanalisation. The client receives Vitamin B12 100 mg. daily and 200 mg. of Vit. E for spermatogenesis and maturation of spermatozoa for one to three months.

Fig. 3 : Anastomosis of vas deferens.

The semen is analysed every month from the third month onwards. If spermatozoa are seen in the semen, the couple are advised to report as soon as the wife conceives. If the wife does not conceive within two years, she is advised to go to a gynaecologist for evaluating her fertility status.

The results of recanalisation of vas is shown in the following table:

Total number of cases	297	%
Sperm seen in the semen	— 241	81%
Became father	— 155	52%

Out of 297 cases, the spermatozoa were seen in the semen of only 241 cases. In the remaining 56 cases the anatomical success could not be achieved because of the following reasons:

- Long gap between the ends of vas needing excessive mobilization for proper anastomosis.

- (b) Vasectomy was done at the convoluted part of the vas deferens.
- (c) Electrocoagulation of vas needing mobilisation.
- (d) Atrophied testicles.
- (e) Blocked vas deferens – the potency could not be established.
- (f) Development of haematoma and infection. Though the spermatozoa were seen in the semen in 86 cases, they could not achieve fatherhood.

In most of these cases, the failure was due to improper counselling, because the wives had been infertile or subfertile.

It was interesting to note that physiological success was higher amongst young fertile wives (newly married).

Newly married young wives	—	67
Wrong motivation	—	5
Total	—	72

The physiological success rate of vas reversal in these cases was high.

Anatomical success	—	58	(81%)
Physiological success	—	47	(65%)

There were men who showed spermatozoa in the semen with fertile wives, but could not make them pregnant. This could be due to the presence of antibodies in their serum against their own spermatozoa.

The number of cases coming for the reversal of vasectomy has been increasing during last 20 years. Davis and Shulman working in USA noted that one per 1000 vasectomised men need recanalisation of vas in their country; but the demand is greater in countries with mortality. In a country like ours with a high infant mortality rate (152 per 1000 live births), the chances of losing the children are quite high. Polygamy, though illegal, is still practised in a few societies demanding recanalisation.

In the Terai region of Nepal and the neighbouring states of India, the vasectomies are performed on illiterate unmarried men to receive the incentive declared by the Governments for adopting family planning. Occasionally healthy men develop depression and impotency following vasectomies. All these cases demand reversal of the vasectomy.

- Loss of children
- Polygamy or another marriage.
- Vasectomies for incentives.
- Depression or impotency.

Phadke and Phadke (1967) reported that the epididymal end of the vas gets dilated and filled up with milky white fluid containing dead and living spermatozoa and macrophages. The testicle continues to produce spermatozoa which are stored and reabsorbed in epididymis till the time the vas is blocked. Once the blockage is removed the spermatozoa will start accumulating in seminal vesicles to be expelled during ejaculation. The low physiological success rate (40%) claimed by Phadke and Phadke must have been due to the low fertility status of wives. Speidel, Perry and Duncon (1974) working in New York also claimed 50-80% of anatomical success but only 25% of physiological success. They claim that the success of reversal depends upon—

1. Quality of semen before vasectomy.
2. Technique of vasectomy.
3. Interval between sterilisation and reversal.
4. Technique of reversal.
5. Fertility status of the wives.

Lee and Soonawala (1974) claim a higher anatomical success rate of reversal procedure by using operating microscope and Speidel et al (1974) endorsed it.

There are surgeons who don't use nylon splint during anastomosis but the results of reversal hardly make any difference whether a splint is used (removed on 4th day) or not. There is hardly any difference if the reversal is attempted at shorter or longer intervals following vasectomies. Speidel and Oblepis and the present author (1974) claim to have anastomosed successfully as long as 21 years after vasectomy.

The higher physiological success rate in our series (52%) may be due to the higher fertility status of wives at the time of reversal procedure.

The presence of antibodies in the serum of vasectomised men may be responsible for the low physiological success following reversal procedure. Shulman (1974) demonstrated the presence of spermatozoa agglutinating activity in 64% of cases undergoing vasectomy. Ausbacher working in Texas (1984) and Shulman working in New York (1974) reported the presence of antibody in the serum of 33% - 50% of cases in 7 - 10 days but antigenic stimulus for the production of antibodies could not be demonstrated. Ausbacher (1974) further postulated that the antibody stimulus may be the leakage of spermatozoa following vasectomy. Unfortunately our laboratory is not in a position to identify either the antigen or antibody. Williamson and Thomas (1984) working on male infertility in undescended or retractile or ectopic testicles quoted that the infertility or subfertility could be the result of auto immunisation of the disased testes to the normal spermatozoa produced by healthy testes. Williamson and Thomas called it "Sympathetic orchicopathia". Similar autoimmunisation could occur following vasectomy.

It is advocated that all the cases demanding recanalisation of the vas need proper counselling and thorough assessment before operation.

Reason for request must be sound.

The wife must be fertile.

Site and method of previous vasectomy must be determined.

Size, physiological status of testes must be assessed.

Socio-economic condition of the couple must be known.

Immune bodies.

If the cases are selected properly, the chances of both anatomical and physiological success could be improved.

Conclusion

The vasectomy was reversed in 297 cases. Most of the people resorted to reversal after the loss of children especially the son, or remarriage. The vasovasostomy must be attempted after thorough counselling of the couple and assessment of the case.

1. Procedure is delicate
 - a) needs patience.
 - b) needs experience of the surgeon.
 - c) needs some sort of magnification.
 - d) surgeon should avoid alcohol and smoking from previous night to avoid tremor.
2. Proper counselling is important.
3. Total success rate is

Anatomical	81%
Physiological	52%
4. Result of reversal depends upon---
 - Fertility status of wives
 - Site and technique of previous vasectomy.
5. Successful recanalisation will enhance vasectomy acceptors.

Internal splint (No. 1 nylon) was used, which was removed on the 4th post operative day. The semen was analysed every month from third month onwards. 241 (81%) cases showed spermatozoa in the semen, indicates that the anastomosis was successful. Only 155 (52%) cases could achieve fatherhood. The success of the procedure depended upon

1. Fertility status of wives
Site and method of previous vasectomy.
2. The success rate was high if the vasectomy had been performed in the straighter part of the vas.

3. Free flow of sperm containing white fluid from the epididymal end of the vas and the potency of both ends of the vas was confirmed.
4. The size and sensation of the testicles were normal.
5. Antibody in the serum.

Our laboratory is not equipped to estimate the level of spermatozoa agglutinating activity in the serum of clients who had anatomical success but could not attain fatherhood (wives are fertile). Today we must tell the people coming for surgical sterilizations that it is a permanent procedure and only in a few cases, can the procedure be reversed.

Acknowledgement

I am obliged to medical directors of Bir Hospital, T. U. Teaching Hospital and Civil Surgeon Koshi Zonal Hospital, Biratnagar for allowing me to publish their hospital records. I am obliged to my pathologist colleagues Dr. D. N. Vaidya, Dr. H. G. Shrestha, Dr. Govind Bdr. Shrestha and Dr. Shovana Shrestha for analysing the semen. I am obliged to doctors working in the different part of the country for referring these cases to me. I am obliged to Mr. Anil Pandey and Mrs. B. Shrestha for preparing the diagrams and photographs and Mr. Keshav Dhungana for preparing manuscript.

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